DOVE HOLLOW LAKE

Daviess County

2004 Fish Management Report

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EXECUTIVE SUMMARY

- A standard fish survey was conducted at Dove Hollow Lake on May 24, 2004 to assess the lakes progress since last surveyed in 2000. Dove Hollow Lake is a 25-acre impoundment located at Glendale Fish & Wildlife Area in Daviess County. Maximum depth is 12 feet. Dove Hollow is currently under an experimental no-harvest regulation for largemouth bass implemented in 1996 to evaluate Dove Hollow's potential as a quality bass lake.

- Water chemistry parameters were normal for this impoundment. The secchi disk was 3 feet 3 inches and the dissolved oxygen was adequate for fish survival to a depth of 4 feet.

- Coontail was the only submersed vegetation found during the Tier II aquatic survey. Filamentous algae was predominant. The emergent, American lotus, covered approximately 2 acres of the north shore.

- A total of 257 fish representing 7 species was collected during the survey. The bluegill sample consisted of 145 fish ranging from 1.8 to 7.9 inches. Bluegill of harvestable size accounted for 30% of bluegill collected. The largemouth bass sample consisted of 63 fish ranging from 3.5 to 13.5 inches. Twenty-nine redear sunfish from 3.1 to 9.7 inches were collected. Other fish collected in the survey include 13 yellow bullhead, 5 hybrid sunfish, 1 black crappie and 1 grass carp.

- The "Evaluation of a Small Lake Intensively Managed for Quality Catch-and-Release Bass Fishing" study ran from 1994 to 2000. After the implementation of the experimental no-harvest bass regulation in 1996, bass length-at-age began to decline and overall numbers of smaller bass increased. Efforts to reverse the negative trend in growth were impractical in terms of cost and effort. A quality bass fishery was unsustainable under the no-harvest regulation at Dove Hollow.

- The Division of Fish and Wildlife should remove the experimental no-harvest regulation from Dove Hollow and reinstate the 14-inch minimum size limit. The management goal for Dove Hollow should be a balanced bass/bluegill fishery.

- The Division of Fish and Wildlife does not recommend additional grass carp be stocked at Dove Hollow Lake.

FIGURES

INTRODUCTION

Dove Hollow Lake is a shallow impoundment built primarily for waterfowl management in 1985. It is approximately 25 acres in size with a maximum depth of 12 feet. It was initially stocked with largemouth bass in June of 1986. The bluegill stocking was canceled after a spot-check survey in August 1986 found green sunfish, bluegill, and black bullhead present. Additional largemouth bass were stocked to keep green sunfish and bullheads under control.

A fisheries survey in 1988 found a satisfactory fishery with bass and bluegill reproducing. Green sunfish and bullheads appeared to be under control. In 1990, fishing was deemed the primary use and the water level was to be maintained at full pool throughout the year. A general survey that same year found reduced growth and overall condition of bluegill (Andrews 1991). Largemouth bass exhibited above average growth and low recruitment. The lake was drawn down to increase predation on small panfish in August and refilled in December 1990.

Because of above average bass growth, a six-year study to evaluate Dove Hollow as a quality catch-and-release bass lake was implemented in 1994. Additionally, 375 triploid grass carp were stocked in the fall of 1994 and the level of the lake was raised two feet to combat the excessive vegetation problems. The experimental no-harvest of largemouth bass began in 1996. As part of the survey, small bass (6.5 to 12.5 inches) were removed annually from 1996 to 1999 to prevent bass from stockpiling. A total of 394 bass were removed in four years. The study concluded that a quality catch-and-release largemouth bass fishery at Dove Hollow was not sustainable without continued drastic measures to maintain largemouth growth (Ball 2000). Without these measures, the lake would continue to see a reduction in largemouth growth and increase in overall numbers. It has been 8 years since the experimental no-harvest was implemented at Dove Hollow.

This report presents the results of a general fishery survey of Dove Hollow in 2004 and management recommendations.

METHODS

A standard fisheries survey was conducted at Dove Hollow Lake (Figure 1) on May 24th, 2004, under the Division of Fish and Wildlife work plan number 204478. Sampling effort consisted of 0.5 hour of pulsed DC night electrofishing with two dippers, two overnight trap net

sets, and two gill net sets. Fish were measured to 0.1 inch TL. Scale samples were taken from game species for age and growth analysis. Weights were taken on all game fish. Proportional Stock Density (PSD) and RelativeWeight (Wr) were calculated according to Anderson and Neumann (1996). Water chemistry parameters were measured according to the Manual of Fisheries Survey Methods (Shipman, et al. 2001).

Tier II aquatic vegetation sampling was conducted on July 20, 2004 according to Pearson (2003). A GPS unit was used to record the location of the limnological data and fish collection sites.

RESULTS

Water chemistry parameters were normal for this impoundment. The Secchi disk was 3 feet 3 inches and the dissolved oxygen was adequate for fish survival to a depth of 4 feet.

The aquatic vegetation survey found only one species of submersed plant (coontail) with a site frequency of 2.8. Filamentous algae was predominant with a site frequency of 36.1. American lotus covered approximately 2 acres of the north shore. A few other species were observed sparsely at the ramp; American elodea, creeping water primrose, brittle naiad, small pondweed, spikerush, water willow and arrowhead.

A total of 257 fish representing 7 species was collected during the survey for a combined weight of 88 pounds. Bluegill dominated the catch by number (56%) and by weight (29%). Largemouth bass were second by number (25%) and third by weight (20%). Redear sunfish were third by number (11%) and fourth by weight (12%). Yellow bullhead were fourth by number (5%) followed by hybrid sunfish (2%). Black crappie and grass carp each represented less than 1% of the total weight. One 35.5-inch grass carp was collected that accounted for 25% of the total weight.

The bluegill sample consisted of 145 fish ranging in length from 1.8 to 7.9 inches TL (Figure 2). The electrofishing catch rate was 264 bluegill/hour. Bluegill of harvestable size accounted for 30% of bluegill collected with a PSD of 66. Bluegill growth was above average at ages 1 through 4 and below average at age 5.

The largemouth bass sample consisted of 63 fish ranging from 3.5 to 13.5 inches TL (Figure 3). The electrofishing catch rate was 126 bass/hour and the PSD was 16. The Wr for

bass 8.0 to 11.5 inches was 81. The Wr for bass 12.0 to 13.5 inches was 86. Bass growth was well below average for all ages.

Twenty-nine redear sunfish from 3.1 to 9.7 inches were collected. The electrofishing catch rate was 30 redear/hour with a PSD of 64. Other fish collected in the survey include 13 yellow bullhead, 5 hybrid sunfish, 1 black crappie and 1 grass carp.

DISCUSSION

Originally, low largemouth bass recruitment and abundant forage made Dove Hollow a candidate for a bass no-harvest regulation. Bass exhibited better-than-average growth. However, in retrospect, excellent growth was more likely a combination of its 'new lake' status and the drawdown in 1990 greatly increasing foraging opportunities. By 1994, the bass population was at its peak with the lowest overall numbers but the highest biomass (Ball 2000).

The "Evaluation of a Small Lake Intensively Managed for Quality Catch-and-Release Bass Fishing" study ran from 1994 to 2000. After the implementation of the experimental no-harvest bass regulation in 1996, bass length-at-age began to decline and overall numbers of smaller bass increased as predicted by Ball (2000). Ball also documented the cost of removing excess smaller bass and found it impractical in terms of cost and effort. Increased competition between bass led to slow growth and low Wr's. Bass energy reserves were too low for stressful situations such as spawning and over-wintering (Anderson & Neumann 1996). The result was an increase in mortality. In this survey, age-5 bass averaged only 12.8 inches compared to 14.4 inches in 1996. No bass over five years old or 14 inches were collected. The lake has been unable to sustain the quality bass fishery documented prior to the survey under the no-harvest regulation.

The experimental no-harvest regulation should be removed from Dove Hollow and the 14-inch minimum size limit reinstated. The new management goal for Dove Hollow is for a balanced bass/bluegill fishery. The 14-inch minimum size limit will reduce bass densities and increase bass growth. A follow-up survey should be conducted to document changes in bass growth.

Grass carp stocked in 1994 for vegetation control stripped Dove Hollow of any significant vegetation, aside from the lotus beds. Without rooted aquatic vegetation, nutrients were made available for filamentous and planktonic algae growth. The resulting reduced water

clarity became the primary limiting factor in preventing aquatic macrophytes from returning. The grass carp will likely reach their life expectancy in the next couple of years. At this age, they are no longer efficient at removing aquatic vegetation. Grass carp should not be restocked at Dove Hollow.

RECOMENDATIONS

- The Division of Fish and Wildlife should remove the no-harvest experimental regulation and reinstate a 14-inch minimum size limit, effective immediately. The new management goal for Dove Hollow should be a balanced bass/bluegill fishery.

- The Division of Fish and Wildlife should conduct a follow-up survey in the future to document bass growth under the 14-inch minimum size limit.

- The Division of Fish and Wildlife does not recommend additional grass carp be stocked at Dove Hollow Lake.

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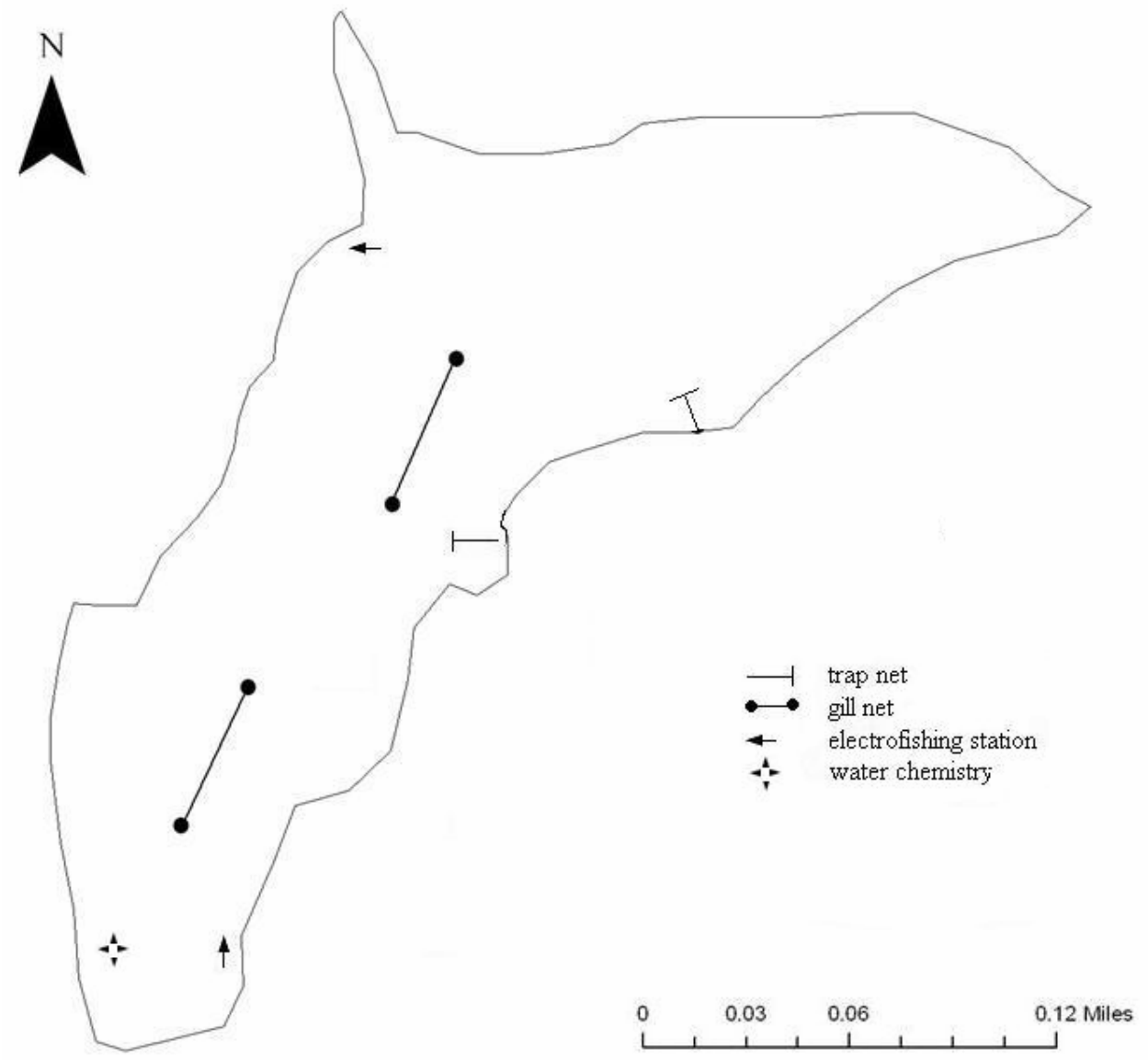

Figure 1. Dove Hollow Lake, Daviess County. Location of water chemistry, gill nets, trap nets, and electrofishing stations, 2004.

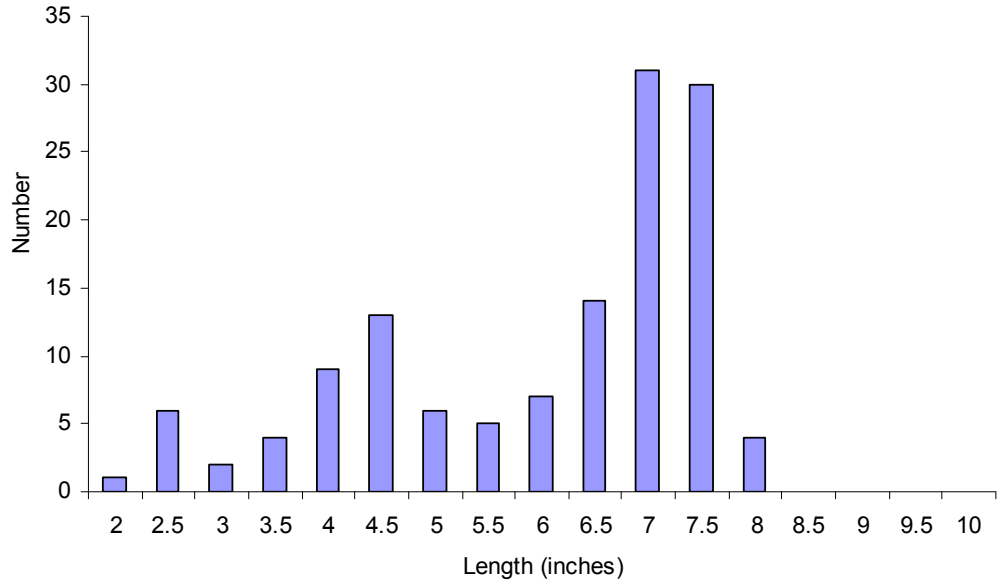

Figure 2. Total number of bluegill by length (inches) collected at Dove Hollow Lake 2004.

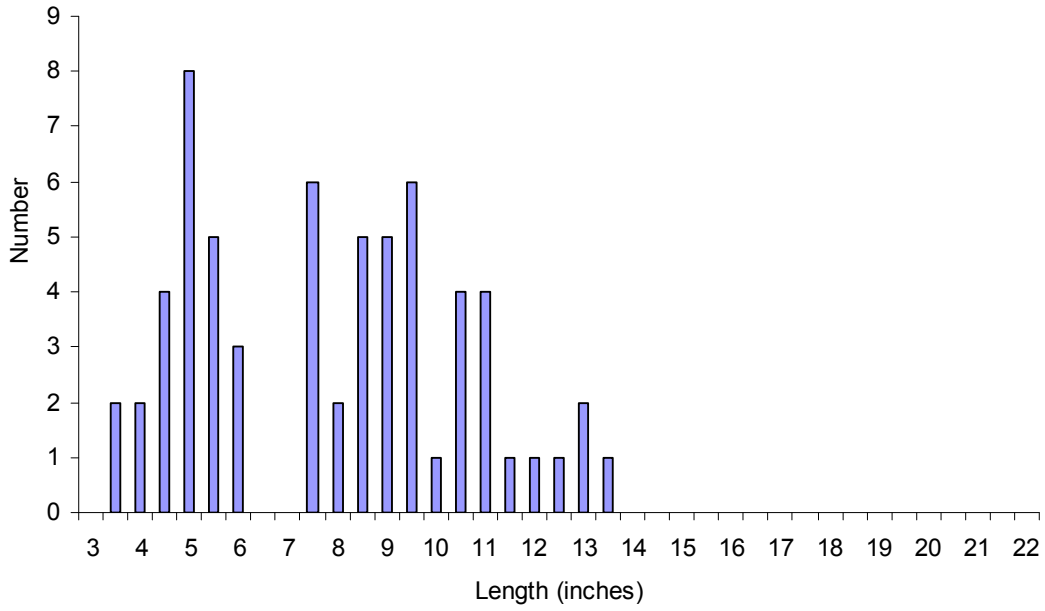

Figure 3. Total number of largemouth bass by length (inches) collected at Dove Hollow Lake, 2004.